WE CLAIM:

1. A method of generating an optical spike at an arbitrarily selected location within an arbitrary optical link, the method comprising steps of:

   deriving a spike signal having a plurality of components, an initial phase relationship between the components being selected such that the components will be phase aligned at the selected location; and

   launching the spike signal into a transmitter end of the optical link.

2. A method as claimed in claim 1, wherein the initial phase relationship between the components is selected to offset dispersion induced phase changes between the transmitter end of the link and the selected location.

3. A method as claimed in claim 1, wherein the spike signal is designed to form an optical spike at two or more selected locations within the optical link.

4. A method as claimed in claim 3, wherein the two or more selected locations within the optical link comprises a receiver end of the link and at least one other location within the link.

5. A method as claimed in claim 1, wherein the spike signal is designed to form an optical spike at exactly one selected location within the optical link.

6. A method as claimed in claim 5, wherein the step of launching the spike signal comprises steps of:

combining two or more spike signals into a composite spike signal; and

launching the composite spike signal into the transmitter end of optical link.

7. A method of monitoring performance of an arbitrary optical link, the method comprising steps of:

generating an optical spike within the optical link;

scanning a position of the optical spike between transmitter and receiver ends of the link; and

monitoring an optical power level at the receiver end of the link.

8. A method as claimed in claim 7, wherein the step of generating an optical spike within the optical link comprises steps of:

deriving a spike signal having a plurality of components, an initial phase relationship between the components being selected such that components will be phase aligned at a desired position of the optical spike; and

launching the spike signal into the transmitter end of the optical link.

9. A method as claimed in claim 8, wherein the initial phase relationship between the components is selected to offset dispersion induced phase changes between the transmitter end of the link and the desired position of the optical spike.

10. A method as claimed in claim 9, wherein the step of scanning a position of the optical spike comprises a step of adjusting the initial phase relationship between the components.

11. A method as claimed in claim 8, wherein the step of monitoring an optical power level at the receiver end of the link comprises a step of monitoring a residual power level of the spike signal at the receiver end of the link.

12. A method as claimed in claim 11, wherein the step of monitoring a residual power level of the spike signal at the receiver end of the link comprises a steps of:

selecting component frequencies such that the spike signal generates a second optical spike within the optical link, the second optical spike being substantially fixed at the receiver end of the link; and

monitoring a power level of the second optical spike.

13. A method as claimed in claim 8, wherein the step of monitoring an optical power level at the receiver end of the link comprises steps of:

launching a predetermined test signal into the transmitter end of the link; and

monitoring the test signal at the receiver end of the link.

14. A method as claimed in claim 13, wherein the test signal comprises a second spike signal for generating a respective second optical spike within the optical link, the second optical spike being substantially

located at a substantially fixed location proximal the receiver end of the link.

15. A method as claimed in claim 14, wherein the step of monitoring the test signal comprises a step of monitoring a power level of the second optical spike.

16. A method of controlling an arbitrarily selected one of a plurality of optical elements of an optical link, each of the plurality of optical elements being responsive to an elevated optical peak power vs. RMS, the method comprising steps of:

generating an optical spike within the optical link, the optical spike being positioned proximal the selected optical element.

17. A method as claimed in claim 16, wherein the step of generating the optical spike within the optical link comprises steps of:

deriving a spike signal having a plurality of components, an initial phase relationship between the components being selected such that the components will be phase aligned proximal the selected optical element, and not phase aligned elsewhere; and

launching the spike signal into a transmitter end of the optical link.

18. A method as claimed in claim 17, wherein the initial phase relationship between the components is selected to offset dispersion induced phase changes between the transmitter end of the link and the selected optical element.

19. A method as claimed in claim 17, wherein respective component frequencies are selected to define a periodicity of the spike signal sized to ensure that exactly one spike is generated within the link.